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Published version

RUST, Chris (2006). Investigating our future: how designers can get us all thinking. In: Viva50plus World Ageing and Generations Congress, St Gallen, Switzerland, 27-29 September 2006. (Unpublished)

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Investigating Our Future – How designers can get us all thinking

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Innovation

We hear a great deal about innovation these days and organisations and professions must find new ways to remain relevant. Unfortunately it is hard to recognise what will be a productive idea to pursue and that is illustrated by diagrams showing how organisations fail or succeed to predicting successful technology.

In Fig 1. an organisation has identified a new idea and started develop it. After a slow start performance improves and the product or service attracts customers because it is becoming useful.

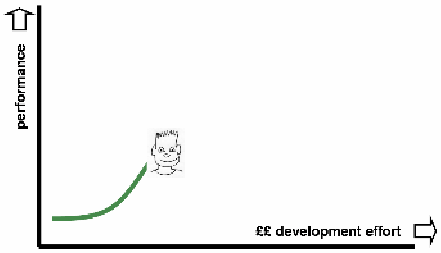

Fig 1. Promising Development

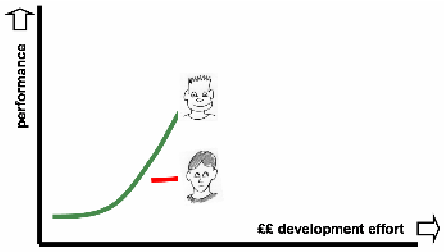

Fig 2. Competition from new ideas?

In Fig 2. investment giving improvements. A promising new idea has appeared but it is not working well despite investment. Organisations will be tempted to stick with their existing idea. They may have factories and trained people committed to it and it would be difficult and expensive to change. Meanwhile an organisation who has not invested in the first idea may take a risk on the new one.

In Fig 3, the first idea has reached its peak and no amount of effort can improve its performance. Meanwhile the newer idea is starting to show some improvement.

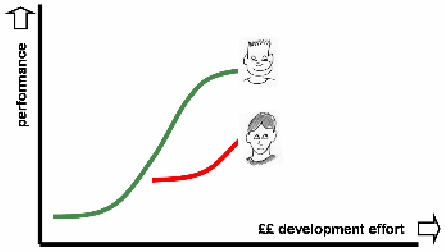

Fig 1. Levelling off

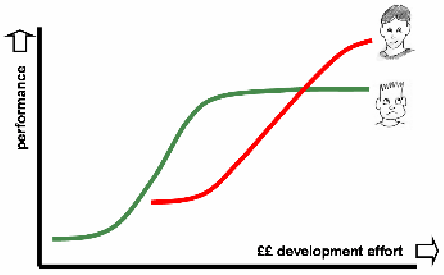

Fig 2. Overtaken by newer ideas

Finally, in Fig 4, the newer methods come of age and, where the two graphs cross, the first idea becomes uncompetitive. Case studies show that big businesses have been wiped out because they failed to predict this kind of problem[1].

So organisations need to know what ideas will be useful in future, and where to invest their development effort. But where does that knowledge come from?.

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[1] This theme is developed in detail, with case examples, by Richard N. Foster (1986)

We expect designers to produce new ideas and they do. The thing that distinguishes a creative person is that they have many ideas and keep on having them, they also have practical skills to test those ideas in action. Nevertheless designers cannot work in isolation and their thinking must be informed by the needs of stakeholders.

Traditionally many organisations have been good understanding what has happened before, and what stakeholders *think* they might need in future but those kinds of knowledge assume that the future will be like the past. We need new insights about people's needs, things that they may not be able to articulate and which are not based on what is available today.

Eric Von Hippel has studied good ideas in industry and has concluded that the most important sources are not the ones we expect. Despite the assumption that manufacturers invent new products, Von Hippel found that effective new ideas came from other people interested in how well the product worked. They could be customers, people who supplied materials, or sold it or repaired it, or had another stake in its success or performance.

He also identified people worth watching – "lead users" who push at the boundaries of what is possible, try to get more from a product, and invent their own ways of doing things. Von Hippel has developed techniques to capture ideas from lead users, including networks, tools for them to change your products and products that are easily changed by users. Von Hippel's ideas started with industrial product design but they are equally valid for services and environments.

Peter Walters, a designer at Sheffield Hallam University (SHU), used this approach to understand older people recruited from the University of the Third Age (U3A), mostly retired professionals with a variety of expertise, interested in continuing to learn and be creative. Peter and his U3A colleagues identified problems preventing older people from gardening, (an important interest for many) and used this insight to design a range of garden tools (fig 5.) that used clever mechanical principles to reduce the effort needed.

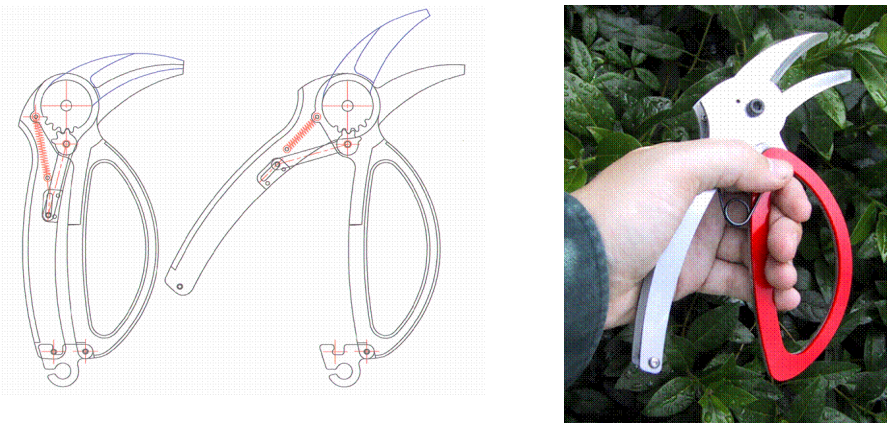

Fig 5. Toucan mechanism

Walters used consultation and observation techniques becoming commonplace among leading designers, who draw on ethnography to support user research. This is a practical example concerned with existing situations. Increasingly designers must predict entirely new situations, where different problems/opportunities converge and new technologies play a part in our everyday lives.

Tacit Knowledge

The essential resource is "tacit knowledge", things that we know but cannot tell because they have become part of our instinctive performance. This term was coined by the scientist and philosopher, Michael Polanyi, trying to understand how scientists recognise

questions worth investigating in research. Polanyi (eg 1966) suggested that these "hunches" result from tacit knowledge, from years of "dwelling in" their subject.

We all have such knowledge from life experience but it cannot be extracted or written down, it is part of us. However we can get people to perform for us – acting out real and imaginary situations, allowing observers to develop new insights. "Play spaces" for stakeholders are a powerful tool for identifying new ideas for the future that reflect the ways in which people operate and the needs and aspirations that they have.

One such technique used is "low-fidelity prototyping", rough mock-ups of new situations, with simple materials like paper and card, so that people will be uninhibited about changing the environment to suit themselves. Examples go back to the 1980's in computer software design (Ehn and Kyng, 1991) and architecture (Mitchell, 1995) but this thinking is being developed further with the growth of interest in "Critical Design"

Critical Design

This technique employs new objects that have no real function, often mock-ups of products that could never work in practice, to stimulate critical reflection by the audience. The original practitioners of critical design operate by producing and exhibiting ideas to provoke reflection by their audience. More recent work, by Simon Bowen at SHU, explores how these techniques provide a step towards identifying new concepts.

His technique, used with older people, is to develop novel design ideas, as mock-ups or sketches, and use them to provoke discussion among a group of stakeholders, encouraging them to explore an aspect of their lives and what they might wish for or need to make a beneficial change. A recent example is "The Prioritiser" (Fig 6) which is designed to provoke reflection on how we deal with all the documents that come into our homes.

This imaginary product has three shelves for new mail. Each day shelves move down and the lowest flips down to drop its contents into a shredder.

This is not a serious design proposal, but it causes people to become acutely aware of the everyday problem that it is designed for and generates a great deal of debate and reflection. By observing this going on the designer is able to internalise a new tacit understanding of the stakeholders and also spot new design ideas in the issues that come up in discussion.

Often the real needs and wishes revealed are completely different from the critical concept design that started the discussion, sometimes they contradict it, but the imaginary product has done its work in getting people to reveal themselves and think creatively.

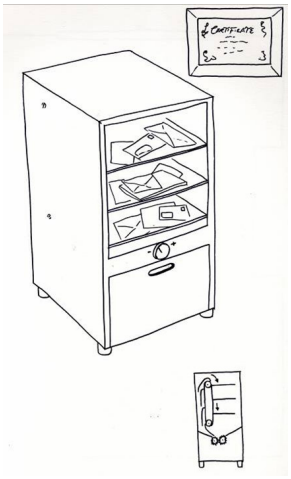

Fig 6. "The Prioritiser"

This work is going forward in research into bathrooms that might adapt to the changing needs of people as they become older, attending to the self-esteem and pleasures of such people and their family members as well as the practical functions. Most bathrooms for disabled people have a distinctly clinical air. By creating a malleable play space to explore our desires and fears as well as our abilities we hope to develop insights that will help future bathrooms to become both more adaptive and more rewarding. Young, fit people take it for granted that a bathroom can be a place for sensual pleasures. We hope to ensure that is not lost just because our bodies become less reliable.

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Chris Rust is an industrial designer whose professional work has included designing for disabled people (British Design Award 1992) and whose research is focused on techniques to exploit tacit knowledge in design. His background includes experience as a Marine Engineer, Musician, Carpenter and Graphic Designer/Photographer before training in transport design and starting his own design consultancy business. He joined Sheffield Hallam University in 1991, becoming Professor of Design in 2001 and Head of the Art and Design Research Centre in 2004. He is also Chair of the Council of the Design Research Society and has recently completed a strategic review of Practice-led Research in Art, Design & Architecture, commissioned by the UK Arts and Humanities Research Council. In his current research, he is leading a group of 9 academics from 5 Universities investigating the personalization of experience and his current book, on Design and Healthcare, will be published in 2007.